

RESULTS OF ABOUT TWENTY THOUSAND CASES TREATED BY THE X-RAYS

*A Paper read at the Australasian Medical Congress,
September, 1911*

BY

HERSCHEL HARRIS, M.B., CH.M. (SYD.)

LATE HON. ASSISTANT SURGEON, SYDNEY HOSPITAL;
HON. RADIOGRAPHER, ROYAL PRINCE ALFRED HOSPITAL,
SYDNEY HOSPITAL, ROYAL ALEXANDRA HOSPITAL FOR
CHILDREN, AND SYDNEY DENTAL HOSPITAL



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INTRODUCTION.

As the medical pioneer of X-Ray work in New South Wales, it has been my lot—shall I say good fortune?—to come across an enormous number of cases of all varieties.

Complete records have not been kept of them all, but I may mention that at the Sydney Hospital alone, up to January, 1910, the recorded figures show as follow :—

Fractures and dislocations	3,792
Other injuries to bones	3,102
Diseases of bones	415
Localization of foreign bodies ..	1,720
Renal and Vesical cases, with 148	
positive findings	1,427
Chest and abdominal cases	376

and one item alone on the therapeutic list includes

Rodent ulcers	520 cases.
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Add to this about fifteen hundred cases treated at the Royal Alexandra Hospital for Children, some hundreds since I have been connected with the Royal Prince Alfred Hospital, and some thousands of private cases, and you will, I am sure, believe me when I say that the remarks I am about to make are based on an experience of over twenty thousand cases, with most of which I have dealt personally.

In the 1900 Report of Sydney Hospital, the following paragraph appeared under the heading of the Skiagraphic Department :—

“A large number of cases have been subjected to the Rays for the purpose of revealing calculi in the urinary tract if such happened to be present,

and the results obtained have been very satisfactory and reliable ; a calculus, the size of a small pea, having been discovered in the kidney in one case, and subsequently removed by operation."

"Advantage, too, has been taken of the therapeutic uses of the Rontgen Rays and patients daily attend the department to have the rays applied for this purpose. So far the treatment has been most successful, and there is every indication that during the next year or two a very wide field will be opened up in connection with this branch of the science."

I had no idea then that such uses would be found for the Rays, as we know exist at present.

What, then, can we predict for the future ?

It is my intention in this paper to roughly summarise to some extent the cases that have passed through my hands, with a few remarks thereon.

A.—FROM A DIAGNOSTIC POINT OF VIEW.

THE BISMUTH MEAL.

By this method a large field has been opened up whereby certain œsophageal and gastric conditions may be diagnosed. I always employ the Oxychloride of Bismuth, and administer it either mixed with oatmeal, to which sugar is added, or else encased in capsules of various sizes.

The capsules are extremely useful in cases of œsophageal stricture. Sometimes a very small one will pass through a stricture, whereas a larger one will be arrested at the site of the lesion.

Another method is to have the meal mixed with milk of different dilutions.

In the liquid form it will pass readily into the stomach, and when the meal is of thicker consistence, it will be seen to trickle through the obstruction in very much the same fashion as an egg boiler.

It should be mentioned that with the capsules the patient must be made to swallow water once or several times, as there is often a tendency for the capsule to stick in the upper part of the œsophagus.

An instantaneous radiograph will reveal the most perfect result in some of these cases.

I often find that a metal chain or œsophageal bougies of different sizes filled with small shot are of very great service for œsophageal examinations.

One case recently exemplified this.

It was a question whether a patient had an œsophageal diverticulum or an hour-glass stomach.

He was given a bismuth meal and then a bougie filled with shot was passed down twenty inches.

An instantaneous skiagram was taken, and revealed the bougie in the stomach, the stomach itself was of normal shape, and a large diverticulum was apparent above the diaphragm. This was further verified, for an abdominal section was performed, and everything was found to be normal.

Subsequently an œsophagoscope was passed and the diverticulum was seen.

The left posterior oblique position is the best for œsophageal examinations.

The diagnosis of gastric conditions is not attended by the same amount of certainty as the œsophageal cases.

I do not think the X-Ray picture itself should be relied upon for a diagnosis. It should be considered in conjunction with the signs and symptoms. The screen examination should be relied upon entirely, and the patient should be standing up.

An average meal consists of eight ounces of oatmeal with two ounces of bismuth and sugar to fancy.

Opinions vary as to the appearance of the normal stomach.

This is hard to define, as not any two appear alike.

In over one hundred examinations the stomach has assumed the shape of the letter J placed almost entirely to the left of the middle line.

The pylorus is about half an inch above the lowest point, which is about the level of the umbilicus and half an inch to the right of the middle line.

I generally employ certain landmarks, and with this object, I place small pieces of sheet lead, each the size of a sixpence, and covered with Z.O. plaster over the umbilicus, the xiphisternum and the anterior superior spines.

There is generally some air in the fundus known as the *Magenblase*.

As a rule a bismuth meal leaves the stomach within $4\frac{1}{2}$ hours.

In cases of atony the shadow of the meal appears low down,

sometimes on a level with the pelvis, and the peristaltic movements are feeble.

Often it is a good plan to stroke the abdominal wall a few times to excite peristalsis.

If this fail, it is generally indicative of some organic trouble.

In cases of pyloric obstruction the peristalsis is generally excessive, and the bismuth meal is present longer than five hours.

Sometimes some is found present even after 24 hours. In these cases marked obstruction is generally present.

As a general rule food is found to reach the cæcum in $4\frac{1}{2}$ hours after injection, and the hepatic flexure in $6\frac{1}{2}$ hours.

Hour-glass constriction can generally be diagnosed by the shape of the shadow produced. The peristalsis in the upper compartment is generally excessive, and often the food is seen trickling through to the lower compartment.

These are the main conditions revealed by a bismuth meal.

I generally examine a case at intervals for periods up to 24 hours. In some cases five hours will suffice.

EXAMINATION OF THORAX.

Considerably over one thousand of these examinations have been made, mainly by means of the screen. Almost with certainty aneurysms are detected. Sometimes it needs some careful discrimination to decide between a dilated arch and a normal arch on the one hand, and an aneurysm on the other.

In large saccular aneurysms of the ascending arch the heart has generally been observed to lie obliquely or almost transversely. It is a debatable point whether this is due to the act of gravity forcing the base down and consequently tilting the apex up, or due to the fact that a generally dilated arch is also elongated.

Since the descending thoracic aorta is fixed in position against the vertebral column, it is the aortic arch lying free in the thorax whose position will alter. Consequently as the arch elongates the commencement of the arch will take up a lower position in the chest, so much lower that in some cases the heart appears to be actually lying upon its right side, with its long axis practically horizontal. (A. C. Jordon, M.D.).

Some of the prettiest pictures seen are those produced by hydatids. These are very easily detected, and when unruptured, are globular.

When they are ruptured, and the patient is in the erect position, the upper level of the cyst shadow is always seen to be horizontal. If the patient be tilted this horizontal line still persists.

This point is very important, for by means of it one can discriminate infallibly between a ruptured and unruptured cyst. It was first pointed out by Dr. MacCormick, of Sydney.

Often an empyema has been correctly diagnosed when a needle failed to draw off any pus. Effusions generally cause little difficulty. Effusions with new growths have sometimes been more troublesome to interpret.

The examination of these cases should always be made after the effusion has been drawn off.

Six cases of sarcoma of lung have been diagnosed this way, and two cases of gumma. A Wassermann reaction has assisted in the latter diagnosis.

I have only come across one case of pneumothorax. The light area was distinctly seen, and corresponded with the physical signs.

The results in cases of bronchiectasis have not been so satisfactory.

In cases of phthisis the results have been uniformly very satisfactory.

It is still questionable to my mind whether the screen will reveal early tuberculosis before the stethoscope. Anyhow, tubercular lesions have often been clearly seen and located.

In my experience the movement of the diaphragm on the affected side is decreased, but not to such an extent as is spoken of in some text books.

FOREIGN BODIES.

It is most amusing to look back on the variety of foreign bodies that have been located in various parts of the body. One may almost say, from the proverbial needle to a sheet anchor.

Hundreds of cases have had portions of a needle in some part or other of the body. I have not yet come across a case where a girl has swallowed a needle and hundreds have been found subsequently in various parts of her body. These cases generally originate in the lay press.

One of my most interesting cases was that in which a youth inhaled a metal collar stud. This was located in the right bronchus, and an instantaneous skiagram was taken. It was subsequently removed through the bronchoscope.

Children appear to be rather partial to swallowing coins, generally half pence. In over thirty cases these have been found stuck behind the cricoid cartilage, and have been readily removed by means of a coin-catcher.

Other foreign bodies have comprised trinkets of all sizes and varieties, buttons, nails, glass, bullets, screws, pins, marbles, whistles, tacks, safety pins, pieces of steel, corkscrews, brooches, etc., etc.

Mention should be made of an infant who swallowed a safety pin, point upwards.

A skiagram revealed the pin half-way down the œsophagus.

An operation proved unsuccessful in this case, and later

on the child was removed to my surgery, the X-Ray tube placed under a table and the screen above.

A gum-elastic catheter, into which a stilet had been previously introduced, was then employed. It was passed into the œsophagus, and down to the pin. Its passage was distinctly seen.

It was then made to push the pin downwards into the stomach, and the infant subsequently passed it.

Had this not been done, the child would certainly have died.

The aptly named "deadly" pea-rifle furnishes a very large number of cases in all hospitals and in private work. In my experience most harm has been caused through the suppuration due either to the foreign material which has been carried into the wound with the bullet, or due to the subsequent searching with a probe. I feel sure that in these cases the adage "Let sleeping dogs lie" should be observed.

I can picture very many cases of people walking about with bullets in their bodies and not suffering any inconvenience as a consequence. Why then interfere and try to remove the bullet just to please the relatives or even the patient? At the best of times a bullet is very difficult to find, mainly because it is usually embedded in bone. My final advice is, "Unless trouble is being caused by its presence, leave it alone."

I cannot say that the various localisers have proved of much avail in these cases.

If necessary, stereoscopic views may be taken, but as a rule a very accurate idea is gauged by means of the screen.

After the first incision is made in searching for foreign bodies, the position of parts alters, due to the elasticity of the tissues.

This must be remembered, and therefore it is always better to make a fairly large incision, one that will admit a finger,

and often this will be the means of finding an object which otherwise might not have been discovered.

It is curious how quickly a needle will become discoloured after once it has entered the tissues. Every one I have seen removed, no matter how soon after its entrance, has been blackened. This is due to the formation of a sulphide.

FOREIGN BODIES IN THE EYE.

The method I employ in these cases is very simple, and the results are very accurate.

A skiagram is taken of the affected eye, and before doing so a small piece of lead pointed at one end is attached to the lower lid by means of some Z.O. plaster.

The pointed part projects over the centre of the pupil, and as far as possible the point corresponds to the centre of the pupil with the eye in the normal position.

When the skiagram is taken and examined, the position of the foreign body may be approximately gauged by comparing its shadow with that of the pointer. This roughly gives the anteroposterior position.

The lateral position is roughly gauged by the clearness of the shadow cast by the foreign body. A clear definition means that it is near the plate, and consequently towards the outer side of the eye.

According as the definition vanishes, the greater is the distance of the foreign body from the plate, and consequently the nearer its location to the inner part of the eye.

Of course, some practice is needed to interpret these cases, but in my experience the results have been excellent.

Over one hundred cases have been localised by this means, the majority at the Moorcliff Eye Hospital, and so far not a single mistake has been made.

In the majority of the cases the foreign body has been removed, and frequently the sight of the eye saved.

By this means quite recently a piece of steel, the size of a grain of sand, was removed successfully at the Royal Prince Alfred Hospital.

Sometimes doubt exists as to whether the foreign body is in the eyeball or the orbit.

If so, I make it a rule to act as follows :—

Two skiagrams are taken on the one plate. The head remains stationary during each exposure. For the first exposure the patient looks as high up as he can, and for the second he directs his eye as low as possible.

If the foreign body be in the eyeball, two shadows then appear on the plate ; whereas, if it be in the orbit only one shadow will appear. The only fallacy is if the foreign body be in the centre of the eyeball.

This, so far, has not happened in my experience.

DISEASES OF JOINTS AND BONES.

Most valuable information has been afforded in these cases. In my experience, practically every known case of bone disease has been radiographed. Sarcoma is much more frequent than is suspected. Altogether I have come across thirty cases. They have all been endosteal, excepting one which was periosteal. The periosteal form is evidently rare.

Only once have I come across a case of coxa vara. This disease is very rare in New South Wales.

Congenital dislocations are quite common. Over and over again the cases have been missed, and treated for acute anterior poliomyelitis.

Tubercular disease of bone is not revealed in a very early stage. Such has been my experience. So far, skiagrams cannot be taken with sufficiently fine detail to reveal the exudation stage of this disease. This especially obtains in hip-joint disease.

In cases of some little standing the diagnosis can be made, but I never place too much confidence on a negative diagnosis in an early suspected case. I have several times been deceived by such cases.

In three cases I have discovered hydatid disease of the bone. A spontaneous fracture had occurred in each case.

Ten cases of osteitis deformans have been collected. This disease is not at all uncommon here. In early cases it is difficult to discriminate between it and syphilis.

Mention may here be made of one interesting case of osteitis deformans that was skiagraphed. One femur only appeared to be enlarged. Other parts of the body were skiagraphed, and subsequently one of the metacarpals was found to be similarly affected.

This may be worth remembering when dealing with doubtful cases of this nature.

Very many cases of syphilitic disease of bone have presented themselves. These cases make the prettiest pictures of any bone lesions.

The humerus (lower end) has been affected more than any other bone. The clavicle in one case only.

Regarding fractures and dislocations, little need be said. It is generally recognised by everybody, be he layman or medical man, that every severe case of injury to bone should be skiagraphed. If possible, two views should be taken of each case, as one view will often show a fracture when the other does not. This also applies with reference to the position of fragments. Stereoscopic views give very great assistance in such cases.

So far I have dealt with over four thousand cases of fractures and dislocations. These cases are of grave consequence to all concerned, as so many court cases arise out of them.

In fact, I may mention here that the work of the radiolo-

gist is generally of a most anxious character, as he is held responsible for his diagnostic or therapeutic results ; as a rule he gets but little credit for his successful cases, and much blame and abuse for any errors he may make.

EXAMINATION OF THE GENITO-URINARY TRACT.

Somehow the majority of my private cases are sent for the above purpose. Altogether, in hospital, and private work, I can number considerably over three thousand cases, I feel sure. The results are now generally very accurate. Perhaps if I state that the percentage of mistakes numbers one, I shall be very near the mark.

There is little to add as to technique since I read my last paper on this subject. The newest appliances, however, enable us to revolutionise the work of a year or two ago, and no patient is too stout now to be radiographed. My record patient was a medical man weighing 19 stone 10 pounds.

A calculus was most clearly seen in his right kidney and the exposure was only eight seconds.

Just think of early days, when half an hour to an hour would be devoted to an exposure for detecting a calculus in a thin patient. A stout patient was considered an impossible proposition. Now we measure our exposures in seconds.

I always employ the compressor diaphragm of Bécère, and I consider it the best we have so far.

Again, and once again, let me exhort you to always take the whole urinary tract. I can remember about fifty cases in which I have detected a small concretion lying at the lower end of the ureter, and often causing pains simulating renal calculus.

Often when I discover an ureteric calculus am I asked my opinion as to operative procedure. This, of course, is a

very difficult point to decide. In more than half the cases, small ureteric calculi pass on without interference.

In one case, where the calculus, the size of a millet seed, was causing very severe pain, preventing the patient from following his occupation, I advised removal, with a satisfactory result.

To be brief, I think in these cases the best advice is to hasten slowly. If the small concretion is not doing any harm or causing any pain, wait ; but, on the other hand, when there are signs of obstruction and severe pains, then I think surgical interference is called for.

I am often worried over the differentiation between ureteric calculi and phleboliths. Since I first called attention to this fallacy in the British Medical Journal some years ago, numerous articles have appeared on this subject. It is often a great stumbling-block. If it can be arranged, catheterisation of the ureters will clear up this point.

The question of recurrent calculi is of very great interest.

In my humble opinion, the cause of such conditions as a rule is due to the fact that something has been left behind at the original operation. Certainly, in some few cases, phosphatic concretions form after a kidney has been opened and a calculus removed, but I feel sure that, in the majority of cases, all the calculi were not removed at the time of the original operation.

It might often be expedient to submit a patient to a roentgenographic examination after being operated upon for a renal calculus. I am afraid that a few surprises would result, especially in cases where a number of calculi have been present in the kidney, and after all we can realise how easily this may happen.

As to vesical calculi, not so many cases come for examination, as there are so many means for detecting this condition.

Anyhow, the procedure is so simple, accurate and painless that many medical men and patients prefer this method to any other.

Always let us remember that phleboliths are often present in the pelvic region, and we must differentiate between them and calculi.

I must admit that very often it is an extremely difficult thing to do.

I feel sure that men are more prone to calculi than women. This, at any rate, is my experience.

It should be remembered that calculi, especially in the ureter, are liable to move. On this account, when an operation is to be performed, I make it a rule to skiagraph the patient immediately beforehand, that is to say, within 24 hours. I always think that in these cases the operating surgeon should be able to obtain assistance from the radio-grapher as to the easiest route to adopt.

There does not appear to be any definite locality in New South Wales predisposed to calculus disease. They come to me from all parts. What surprises me is the rarity of the disease in children.

An excellent paper has been written by Professor Benjamin Moore, of Liverpool University, on the "Chemical composition and mode of formation of renal calculi."

The analyses were made from cases drawn from a wide area where the water was soft and contained practically no calcium salts. In his opinion, gravel and renal calculi more often lead to infection of the kidney than primary kidney infection leads to renal calculi.

He forms the opinion that the formation of renal calculi has for its basis a condition of diminished oxidation in which there appear primarily calcium salts of incompletely oxidised bodies, such as calcium oxalate and calcium urate, associated with calcium phosphate.

Further, such diminished oxidation, occurring locally or generally, is seen in many pathological conditions, such as calcium salt deposition in bone in old age, in tuberculous lesions, in gout, in arterio-sclerosis, and generally in calcification processes in the body. The tendency towards such deposition increases with age, and is probably accompanied by an increased alkalisation of the body fluids.

This latter statement certainly bears out my experience, viz. : that calculi in children are rare.

In a series of calculi examined by Professor Moore, he found calcium oxalate in all but two, and in large percentages too, only one containing less than 30 per cent.

The next most abundant ingredient was tricalcic phosphate, a very insoluble calcium salt.

They mostly all contained a very low uric acid percentage.

Even with a normal calcium metabolism, therefore, if oxalic, phosphoric or uric acids begin to be formed in increased amounts, it may be expected that they will commence to be deposited as calcium salts ; at the same time there is little doubt that in case of deposition of such acids from such dilute solutions as are present in the body fluids any concentrating of the kation calcium will increase the tendency to precipitation and cause an increased rate of deposit. other things being equal. Therefore, in recommending diet after removal of calculi containing calcium salts, it would be rational to interdict or diminish foods rich in calcium, such as milk, milk biscuits, milk puddings, etc., cheese, the whole meal of wheat and oats.

Many wines, especially the commoner varieties, contain calcium salts added in the process known as "plastering." Most malt liquors contain calcium salts. All the heavier wines, as well as alcohol in general, have the defective quality of decreasing the rate of oxidation in living tissues, and hence

tend towards that incomplete metabolism which gives rise to the oxalates and urates.

The treatment by alkaline waters is generally useless in such cases, the benefit of spa treatment being due rather to the enforced exercises than to the waters.

Calcium oxalate and calcium phosphate are more soluble in acid than alkaline media, the alkaline treatment of lithiasis being based upon the solubility of the supposed preponderating uric acid and urates. For some considerable time now I have come to the conclusion that most calculi contain calcium salts, for, if it were not so, I feel sure that the results would not be so accurate as they are, and very many would not be detected at all.

I think the importance of the above statements points to the necessity of having a thorough analysis made of every calculus removed, and treating the patient subsequently according to the result.

GALL STONES.

Twice only have I been able to detect gall stones, and each time the diagnosis has been confirmed by subsequent operation.

Gall stones are difficult to detect because cholesterin does not cast a shadow. When shadows of them are obtained we may feel sure that calcium salts are present.

B.—FROM A THERAPEUTIC POINT OF VIEW

LEUKAEMIA.

Some most interesting results have been obtained in the treatment of this disease. Most cases that have come under my care have been of the spleno-myelogenous type. The lymphatic type is rare. Altogether I have treated about twelve cases, all with some benefit, and some with remarkable benefit.

The most successful case is that of a child who was treated at the Royal Alexandra Hospital for Children six years ago. At intervals she returns for treatment, and when last seen was very well.

My plan for some time now is to radiate the bones chiefly and the enlargements later. This is viewing the condition as analogous to malignant disease, with the primary focus in the bones and the metastases in the glands.

Later the glandular enlargements, including the spleen, are irradiated.

A filter of aluminium is employed and a full Sabouraud dose is applied daily if possible, to the large bones in succession. The blood count is watched, and when marked improvement follows, the secondary enlargements are attacked.

When the white cells drop to about 12,000 I usually stop treatment, for a while at all events.

The patient should be kept under close observation, monthly blood counts being made, and any sign of an increase should be followed by a fresh course of X-Rays.

Sometimes it has been observed that if the spleen be irradiated to start with, a severe toxæmia may result.

This may often be avoided by attacking the bones first.

I prefer arsenic to be discontinued during treatment with the rays, as sometimes this assists to produce or accentuates the toxæmia. Arsenic seems to produce leucolytic substances similar to the rays, and the latter are not then so well under control.

Arsenic, I think, is of use when the rays have ceased for a time to act. It may then be administered, and so help, if possible, to carry on the work of the rays. Some cases respond to treatment better than others. It is rather much to look for a cure, but great relief is usually afforded, and life thereby may be greatly prolonged.

HODGKIN'S DISEASE

This responds well as a rule to X-Ray treatment. Many cases have shown excellent results. One case, which had been operated upon in Adelaide and recurred, and subsequently was sent to me for treatment, has remained well for seven years.

TUBERCULAR ADENITIS.

Since the last Congress held at Melbourne, my views have changed somewhat regarding the treatment of this disease. At the same time I still think that, as far as possible, either treatment by tuberculin, or surgical interference is to be preferred. Failing this, many excellent results are to be obtained by employing X-Rays, and in early cases, I think, it is quite justifiable to adopt this form of treatment.

Irradiation for chronic discharging sinuses yields splendid results.

CARCINOMA OF THE BREAST.

I shall briefly summarise my results by quoting from a paper on this subject by Russell H. Beggs, M.D., of Pittsburg, Pa. I am quite in accord with his statements.

“Under the influence of the Roentgen Rays used as a palliative remedy, glandular involvement has melted away ; ulcerated masses have healed over ; adherent tumours have become movable ; some inoperable cases have become operable ; rapidly growing carcinomata have assumed a more scirrhus type ; lymphatic pathways have been sealed against extension, and a fibrous wall has been erected against further growth ; life has been prolonged and redeemed from misery.

Post-operative treatment has diminished scarring. promoted healing, postponed or prevented recurrence.

Such results demand not only technical competence, but judgment, clinical knowledge of both the disease and the remedy, promptness, energy and courage.”

I shall not enter fully into the discussion of the irradiation of operable cases either before or after operation.

Personally, I prefer that the surgeon should rely upon his own resources, and do his best without falling back upon the X-Rays to finish his work.

Such an attitude is liable to produce poor surgery, and the life of the patient will thereby be jeopardised.

GOITRE.

I have had several successful cases of goitre which have responded admirably to the rays. This treatment was preferred to operation. Cystic goitres are unsuitable for such treatment.

Regarding exophthalmic goitre, some cases improve greatly if the rays are employed early enough.

The rays should, even then, only be an adjunct to other forms of treatment.

Then again, as a pre-operative measure, I feel sure that the rays may be often employed with advantage.

The only objection I find in such cases is that the thyroid becomes more adherent to the trachea than it otherwise would be.

RODENT ULCERS.

Hundreds of such cases have passed through my hands, and the results are generally very good.

Hospital results, naturally, are not as good as private ones, simply because the patients will not always attend as directed for treatment and report themselves at intervals if necessary.

For some years my plan has been to curette as much of the involved tissue as possible, and then to apply pure carbolic acid.

Irradiation is then started.

Full doses are given once a week for several times, and in private I generally finish up with a filtered full dose.

Each case is judged on its own merits, and the treatment may be modified accordingly.

RINGWORM OF THE SCALP.

Since the late Dr. W. J. Munro and I treated the first case at the Sydney Hospital in 1907, about sixty-five cases have been treated by me.

Following Sabouraud's method, the scalp is irradiated in five places, and by this means the whole scalp is treated. The results have always been excellent, and so far no untoward result has happened.

To this number I may add twenty private cases, all of which have been equally successful.

The hair usually returns thicker, and with a tendency to be wavy.

KELOID.

The method adopted is practically the same as that I advocated when reporting the first case ever treated. Several reactions are produced till the scar tissue disappears.

Sometimes pure carbolic acid is applied, which greatly assists these cases in reacting.

Not any other method will produce better results than the X-Rays properly administered.

Time prevents me going into much detail respecting other cases treated, but they include Keratoses, which are most amenable to irradiation; Dermatitis of different varieties; Pruritus, Lupus Vulgaris and Erythematosis; Acne Vulgaris, which also responds well to treatment; Eczema, Psoriasis, Warts, Chronic Ulcers, Lichen Planus, Sycosis and Hyperidrosis.

I have had several successful cases of this last mentioned condition. In short, I think it may be briefly be said that generally skin cases that do not respond to other forms of treatment do well under X-Ray treatment.

METHOD ADOPTED FOR THERAPEUTIC WORK.

For some years now I have employed the pastilles of Sabouraud for measurement of my doses. I am able to rely on them implicitly, and measure fractions of doses by comparison with Tint B., so that, if necessary, I can administer one-third of a full dose and so on.

This is useful in many cases, only care must always be taken to enter the individual doses in a book, and before each fresh dose is administered to add up the preceding ones.

The pastilles I always keep in a Petri's dish exposed to the sun. By this means they regenerate, and are kept clean and may be used over and over again.

I consider that all therapeutic doses should be measured and not administered in the slipshod fashion of five minutes a day or ten minutes a day as some men prescribe them, and as we even now see recommended in some of the latest text books.

How can we know what dose the patient is getting? Why, the tube may be inert!

As to filters, I employ many varieties. Felt paper, leather of various thicknesses, aluminium usually about one-third m.m. thick, and silver of about equal thickness. The last two filters are admirable.

Professor Barcla declares that the silver radiations are similar to the Beta rays of radium. Certainly the results are good.

It is surprising what large doses can be administered when the rays are filtered. I still, in these cases, employ my pastille the opposite side of the filter.

I often have been surprised to find rapid reactions in some of my cases, usually unfiltered ones. They may be termed "precocious reactions," and occur sometimes within a few hours of the application.

They pass off rapidly, and the true reaction comes on about the tenth day.

Strange to say, out of the thousands of therapeutic cases treated during the past thirteen years, I have never had a case of "acute" burn. Some have developed telangiectasis, especially the earlier ones, and is it to be wondered at! Daily sittings of 10 minutes each continuing for weeks or months, tubes of any variety and at any distance—the only wonder is that all the early cases were not burned! And here let me mention a very important point.

I have always made it a rule to under-dose my hospital patients so as to maintain a safe margin. We can take greater risks with our private patients, as we have them entirely under our own supervision. Not so in a large hospital department.

This, too, accounts for private results being better as a whole than hospital results. Another factor too, and a very annoying one, is that frequently hospital patients discontinue treatment before they should, and often are lost sight of till they return months after and say they have a recurrence.

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This is over and over again referred to.

It always seems to me to be stretching the imagination too far to imagine that abnormal cells are singled out by rays of any description. It is far more rational to argue that when a particular lesion is being rayed, all the cells come under their influence and suffer more or less, but the abnormal cells have not the same recuperative power as the healthy ones, hence the result that follows a reaction.

In the X-Rays we may truly claim to have a marvellous therapeutic, surgical and medical aid, and if conscientiously used, and not abused, we may look forward to still more wonderful results.

C.—DISCUSSION.

DR. ARGYLE (Melbourne): I wish to say that this is one of the best papers that have been placed before us. It is a pity that a paper like this was not read earlier. I feel sure all of us will look forward to the opportunity for perusing it in print. I think that, from the very vast store of his information, Dr. Herschel Harris must sometimes smile at some of the opinions which are often expressed by some of us, who are very much junior to him in the handling of patients with the X-Rays. When we count our cases by hundreds, he must have had thousands, and I suppose there are few men in the world who have had a wider experience in the treatment of cases that come under the control of the radiologist. I am not going to attempt to discuss his paper; it is impossible to do so, but I would like to say that I differ a little from Dr. Harris in connection with the bismuth meal. My experience has been that very much longer than 5 hours is necessary. I have not followed out the question very fully, but I would ask how long does Dr. Harris think it should remain in the stomach? My usual practice is, in giving the bismuth meal, to make an examination about 18 hours afterwards. With these few remarks, I simply express my very great thanks for the paper, which I hope we will all study later on, when it is published.

DR. MOLESWORTH (Sydney): I should like to thank Dr. Herschel Harris. I may say, whenever I want any information, I always ask Dr. Harris, who is always ready to supply it. As far as the therapeutic work is concerned, I wish to thank Dr. Harris very much for the help that he has given me in the past, and for the great excellence of the paper, and the enormous collection of cases. When I look back and see the huge number of cases he has had, I cannot but feel very humble indeed in viewing my own work in contrast to his vast experience.

DR. CLENDINNEN (Melbourne) (President of the Section) : I would like to extend my congratulations to Dr. Harris for this valuable paper. As Dr. Argyle said, it is a pity it was not brought on earlier.

Dr. Harris, as we all know, is the pioneer of X-Rays here, and has done a lot of very valuable work, and these cases and the collection of statistics he has, will no doubt under-rate what he has done. I have never seen anything like it before. There is no man who has done the work Dr. Harris has done. Dr. Harris has given us all some very valuable hints from time to time in the work. He has always been willing to help and give assistance to others, and I desire to thank him for the wonderful paper he has given us.

DR. HARRIS (in reply) : I thank you very much for the very nice things you have said. I do not know whether I deserve them all. It simply happened to be—shall I say—my good fortune to have handled these cases, because sometimes I regret having taken up X-Rays for several reasons. I think our aim should be to work well together as much as possible. It has afforded me the greatest pleasure to have acted as Secretary to our worthy President, Dr. Clendinnen, who is one of my oldest and dearest of friends. To him I owe much, and I always look upon him as my first coach.

In the early days, when I was a resident at the Sydney Hospital, and Dr. Clendinnen visited this State, he would invariably call on me, give me many valuable hints, and stir my enthusiasm. This I shall never forget.

I must apologise for the length of my paper, and even now I assure you that I have considerably curtailed it.

In conclusion, I think we can all congratulate ourselves on the very pleasant and amicable discussions that have followed our papers on Radiology.

